

## **26. RACES AND GAMES**

### **IMPORTANT FACTS**

**Races:** A contest of speed in running, riding, driving, sailing or rowing is called race

**Course:** The ground or path on which contests are made is called a race course.

**Starting Point:** The point from which a race begins is known as a starting point.

**Winning Point or Goal:** The point set to bound a race is called a winning point or a goal.

**Winner:** The person who first reaches the winning point is called a winner.

**Dead Heat Race:** If all the persons contesting a race reach the goal exactly at the same time, then the race is said to be a dead heat race.

**Start:** Suppose A and B are two contestants in a race. If before the start of the race, A is at the starting point and B is ahead of A by 12 metres, then we say that 'A gives B, a start of 12 metres.'

To cover a race of 100 metres in this case, A will have to cover 100 metres while B will

have to cover only  $(100 - 12) = 88$  metres. i

In a 100 m race, 'A can give B 12 m' or 'A can give B a start of 12 m' or 'A beats B 12 m' means that while A runs 100 m, B runs  $(100 - 12) = 88$  m.

**Games:** 'A game of 100, means that the person among the contestants who scores 100m first is the winner.

If A scores 100 points while B scores only 80 points, then we say that 'A can give B 20 points.

### **SOLVED EXAMPLES :**

**Ex. 1. In a km race, A beats B by 28 metres or 7 seconds. Find A's time over the course.**

**Sol.** Clearly, B covers 28 m in 7 seconds.

∴ B's time over the course =  $(\frac{278}{7} \times 1000)$  sec = 250 seconds.

∴ A's time over the course =  $(250 - 7)$  sec = 243 sec = 4 min. 3 sec.

**Ex. 2. A runs  $1\frac{3}{4}$  times as fast as B. if A gives B a start of 84 m, how far must winning post be so that A and B might reach it at the same time?**

**Sol.** Ratio of the rates of A and B =  $\frac{7}{4} : 1 = 7 : 4$ .

So, in a race of 7 m, A gains 3m over B.

∴ 3 m are gained by A in a race of 7 m.

∴ 84 m are gained by A in a race of  $(\frac{7}{3} \times 84)$  m = 196 m.

∴ Winning post must be 196 m away from the starting point.

**Ex. 3. A can run 1 km in 3 min. 10 sec. and B can cover the same distance in 3 min. 20 sec. By what distance can A beat B ?**

**Soln:** Clearly, A beats B by 10 sec.

Distance covered by B in 10 sec. =  $(\frac{1000 \times 10}{200})$  m = 50 m.

Therefore A beats B by 50 metres.

**Ex. 4 . In a 100 m race, A runs at 8km per hour. If A gives B a start of 4 m and still him by 15 seconds, what is the speed of B ?**

**Sol:** Time taken by A to cover 100 m =  $(\frac{60 \times 60}{8000}) \times 100$  sec = 45 sec.

B covers  $(100 - 4)$  m = 96 m in  $(45 + 15)$  sec = 60 sec.

B's speed =  $(\frac{96 \times 60 \times 60}{60 \times 1000})$  km/hr = 5.76 km/hr.

**Ex. 5. A, B and C are three contestants in a km race. If A can give B a start of 40 m and A can give C a start of 64m how many metre's start can B give C ?**

**Sol:** While A covers 1000 m, B covers  $(1000 - 40)$  m = 960 m and

C covers  $(1000 - 64)$  m or 936 m.  
When B covers 960 m, C covers 936 m.

**Ex 6. In a game of 80 points; A can give B 5 points and C 15 points. Then how many points B can give C in a game of 60 ?**

**Sol.**  $A : B = 80 : 75$ ,  $A : C = 80 : 65$ .

$B/C = (B/A * A/C) = (75 / 80 * 80 / 65) = 15/13 = 60/52 = 60:52$

Therefore ,In a game of 60, B can give C 8 points.

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